



FORM PTO-1449  U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT BY APPLICANT  (Use several sheets if necessary)	ATTY. DOCKET NO. I-2-0455.1US	SERIAL NO. 10/791,244
	APPLICANT Yang et al.	
	FILING DATE March 2, 2004	GROUP 2611

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		5,412,620	05/1995	Cafarella et al.			
		5,487,069	01/1996	O'Sullivan et al.			
		5,559,757	09/1996	Catipovic et al.			
		5,577,066	11/1996	Schuchman et al.			
		5,612,978	03/1997	Blanchard et al.			
		5,805,638	09/1998	Liew			
		5,818,868	10/1998	Gaudenzi et al.			
		5,828,658	10/1998	Ottersten et al.			
		5,930,369	7/1999	Cox et al.			
		6,047,020	04/2000	Hottinen			
		6,097,753	08/2000	Ko			
		6,128,276	10/2000	Agee			
		6,137,848	10/2000	Chennakeshu et al.			
		6,141,393	10/2000	Thomas et al.			
		6,144,711	11/2000	Raleigh et al.			
		6,181,714	01/2001	Isaksson et al.			
		6,188,717	02/2001	Kaiser et al.			
		6,219,561	04/2001	Raleigh			
		6,289,005	09/2001	Katz			
		6,321,066	11/2001	Katz et al.			
		6,321,082	11/2001	Katz			
		6,320,903	11/2001	Isaksson et al.			
		6,359,926	03/2002	Isaksson et al.			
		6,359,938	03/2002	Keever et al.			
		6,363,128	03/2002	Isaksson et al.			

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		6,366,554	04/2002	Isaksson et al.			
		6,377,632	04/2002	Paulraj et al.			
		6,392,595	05/2002	Katz et al.			
		6,396,801	05/2002	Upton et al.			
		6,438,174	08/2002	Isaksson et al.			
		6,445,342	09/2002	Thomas et al.			
		6,456,649	09/2002	Isaksson et al.			
		6,466,629	10/2002	Isaksson et al.			
		6,473,449	10/2002	Cafarella et al.			
		6,473,453	10/2002	Wilkinson			
		6,493,395	12/2002	Isaksson et al.			
		6,505,053	01/2003	Winters et al.			
		6,512,737	01/2003	Agee			
		6,538,986	03/2003	Isaksson et al.			
		6,553,012	04/2003	Katz			
		6,611,855	08/2003	Hellberg et al.			
		6,618,431	09/2003	Lee			
		6,643,526	11/2003	Katz			
		6,658,619	12/2003	Chen			
		6,680,969	01/2004	Molnar et al.			
		6,662,024	12/2003	Walton et al.			
		6,671,334	12/2003	Kuntz et al.			
		6,674,795	01/2004	Liu et al.			
		6,684,065	01/2004	Bult et al.			
		6,693,953	02/2004	Cox et al.			
		6,700,919	03/2004	Papasakellarios			

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6,724,743	04/2004	Pigeonnat			
		6,729,929	05/2004	Sayers et al.			
		6,744,320	06/2004	Nguyen et al.			
		6,745,352	06/2004	Cheng			
		2002/0136158	09/2002	Frank			
		2002/145989	10/2002	De Parthapratim et al.			
		2003/0026201	02/2003	Arnesen			
		2003/0035491	02/2003	Walton et al.			
		2003/0043732	03/2003	Walton et al.			
		2003/0043767	03/2003	Pan et al.			
		2003/0043887	03/2003	Hudson			
		2003/0043925	03/2003	Stopler et al.			
		2003/0048856	03/2003	Ketchum et al.			
		2003/0058952	03/2003	Webster et al.			
		2003/0063557	04/2003	Mottier			
		2003/0072291	04/2003	Brunel			
		2003/0076908	04/2003	Huang et al.			
		2003/0076900	04/2003	Magee et al.			
		2003/0081781	05/2003	Jensen et al.			
		2003/0086366	05/2003	Branlund et al.			
		2003/0099216	05/2003	Nilsson et al.			
		2003/0103584	06/2003	Bjerke et al.			
		2003/0108117	06/2003	Ketchum et al.			
		2003/0112880	06/2003	Walton et al.			
		2003/0123384	07/2003	Agee			
		2003/0125040	07/2003	Walton et al.			

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		2003/0128658	07/2003	Walton et al.			
		2003/0129984	07/2003	Dent			
		2003/0133403	07/2003	Castelain et al.			
		2003/0147655	08/2003	Shattil			
		2003/0152021	08/2003	Wang et al.			
		2003/0165131	09/2003	Liang et al.			
		2003/0185310	10/2003	Ketchum et al.			
		2003/0210752	11/2003	Krupka			
		2003/0215007	11/2003	Mottier			
		2003/0216154	11/2003	Mennenga et al.			
		2003/0227866	12/2003	Yamaguchi			
		2003/0235255	12/2003	Ketchum et al.			
		2004/0032354	02/2004	Knobel et al.			
		2004/0032918	2/2004	Shor et al.			
		2004/0052236	03/2004	Hwang et al.			
		2004/0086027	05/2004	Shattil			
		2004/0086035	05/2004	Upton et al.			
		2004/0087275	05/2004	Sugar et al.			
		2004/0095907	05/2004	Agee et al.			
		2004/0100897	05/2004	Shattil			
		2004/0101046	05/2004	Yang et al.			
		2004/0116077	06/2004	Lee et al.			
		2004/0120274	06/2004	Petre et al.			
		2004/0120424	06/2004	Roberts			
		2004/0136399	07/2004	Roberts			
		2004/0141548	07/2004	Shattil			

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		2004/0142663	07/2004	Roberts			
		2004/0146024	07/2004	Li et al.			
		2004/0240595	12/2004	Raphaeli			

## FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
		0766468	04/1997	EP				
		1017183	07/2000	EP				
		1047209	10/2000	EP				
		1063780	12/2000	EP				
		1119146	07/2001	EP				
		1139632	10/2001	EP				
		1175022	01/2002	EP				
		1255387	11/2002	EP				
		1289182	03/2003	EP				
		1300999	04/2003	EP				
		1303094	04/2003	EP				
		1357693	10/2003	EP				
		1365554	11/2003	EP				
		1379020	01/2004	EP				
		1411693	04/2004	EP				
		1992-0009249	05/1992	KR			X**	
		1998-702348	07/1998	KR			X**	
		20000027178	05/2000	KR			X**	
		2003-0034260	05/2003	KR			X**	

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							YES	NO
		95/22859	08/1995	WO				
		95/27349	10/1995	WO				
		96/22638	07/1996	WO				
		97/34421	09/1997	WO				
		97/35384	09/1997	WO				
		97/48192	12/1997	WO				X
		98/09395	03/1998	WO				
		98/10545	03/1998	WO				
		98/10549	03/1998	WO				
		98/10550	03/1998	WO				
		98/10552	03/1998	WO				
		98/10553	03/1998	WO				
		98/10554	03/1998	WO				
		98/10555	03/1998	WO				
		98/18272	04/1998	WO				
		98/36596	08/1998	WO				
		98/36598	08/1998	WO				
		98/36599	08/1998	WO				
		98/37638	08/1998	WO				
		99/49602	09/1999	WO				
		99/62280	12/1999	WO				
		WO/082683	10/2002	WO				
		00/11823	03/2000	WO				
		00/52872	09/2000	WO				
		01/10065	02/2001	WO				

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							YES	NO
		01/33761	05/2001	WO				
		01/33791	05/2001	WO				
		01/47202	06/2001	WO				
		01/47203	06/2001	WO				X
	*	01/52489	07/2001	WO				
		01/53932	07/2001	WO				
		01/54300	07/2001	WO				
		01/54305	07/2001	WO				
		02/054537	07/2001	WO				
		02/054601	07/2002	WO				
		02/061962	08/2002	WO				
		02/067527	08/2002	WO				
		02/073937	09/2002	WO				
		02/080483	10/2002	WO				
		02/082683	10/2002	WO				
		02/093779	11/2002	WO				
		02/093784	11/2002	WO				
		02/093819	11/2002	WO				
		02/29977	04/2002	WO				
	*	02/63779	08/2002	WO				
		03/005291	01/2003	WO				
		03/010898	02/2003	WO				
		03/015292	02/2003	WO				
		03/026237	03/2003	WO				
		03/028270	04/2003	WO				

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							YES	NO
		03/044983	05/2003	WO				
		03/081823	10/2003	WO				
		03/084092	10/2003	WO				
		03/092212	11/2003	WO				
		04/002047	12/2003	WO				
		04/003743	01/2004	WO				
		04/008704	01/2004	WO				
		04/023704	03/2004	WO				
		04/023704	03/2004	WO				
		04/032347	04/2004	WO				
		04/036345	04/2004	WO				
		04/038984	05/2004	WO				
		04/059935	07/2004	WO				
		04/064298	07/2004	WO				

## OTHER DOCUMENTS

EXAMINER INITIAL	DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)
	"Fast Algorithm for Solving Toeplitz Systems of Equations" IBM Technical Disclosure Bulletin, May 1980, US, Vol. 22. No. 12.
	BENVENUTO, "Joint Detection with Low Computational Complexity for Hybrid TD-CDMA Systems," VTC 1999, Fall IEEE VS 50 <sup>th</sup> Vehicular Technology Conference, Volume 1, September 19-22, 1999, vol.1, pp. 618-622.
	BERETTA ET AL., "Space-Time multiuser detectors for TDD-UTRA". IEEE, Fall 2001.
	GOLUB ET AL., "Matrix Computations," 3 <sup>rd</sup> Edition, The Johns Hopkins University Press, Baltimore, MD, pp. 201-202, (1996).

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EXAMINER INITIAL		DESCRIPTION (Including Author, Title, Date, Pertinent Pages, Etc.)
		GRAY, "Toeplitz and Circulant Matrices: A Review," available at <a href="http://ee.stanford.edu/~gray/toeplitz.pdf">http://ee.stanford.edu/~gray/toeplitz.pdf</a>
		HAYKIN, "Adaptive Filter Theory", Third Edition, Prentice Hall, 1996, pp. 87-93,
		KAY, "Fundamentals of Statistical Signal Processing: Estimation Theory," Prentice Hall, New Jersey, XP002428399, (1993).
		MEYR ET AL., "Digital Communication Receivers: Synchronization, Channel Estimation, and Signal Processing," Wiley Interscience, New York, XP002428398, pp. 700-717, 782-789, (1998).
		SINN ET AL., "Efficient Data Detection Algorithms in Single and Multi-Carrier Systems Without the Necessity of a Guard Period," page 2739, left-hand column, figure 2.
		SUN ET AL., "On the Convergence of the Inverses of Toeplitz Matrices and its Applications," IEEE Transactions on Information Theory, vol. 49, no.1, pp.180-190, (January 2003).
		VOLLMER ET AL., "Comparative Study of Joint-Detection Techniques for TD-CDMA Based Mobile Radio Systems", IEEE Journal on Selected Areas in Communications, Vol. 19, No. 8, August 2001, pp. 1461-1475.
		VOLLMER ET AL., "Joint-Detection using Fast Fourier Transforms in TD-CDMA based Mobile Radio Systems". 1999 (XP-002190679)
		WILLIAMSON ET AL., "Block Decision Feedback Equalization," IEEE Transactions on Communications, IEEE Service Center, Piscataway, New Jersey, vol. 40, no. 2, pp. 255-264, (February 1, 1992).

\*\*English Abstract Only

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